PowerBass™ Series
PB10 Subwoofer

SERVICE MANUAL



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Woodbury, New York 11797

REV 0 7/00

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SAFETY INFORMATION

Warning

Any person performing service of this unit will be exposed to hazardous voltages and the risk of electric shock. It is assumed that any person who removes the amplifier from this cabinet has been properly trained in protecting against avoidable injury and shock. Therefore, any service procedures are to be performed by qualified service personal ONLY!

Caution

This unit does not have a power switch. Hazardous voltages are present within the unit whenever it is plugged in.

Before the amplifier is plugged in, be sure its rated voltage corresponds to the voltage of the AC power source to be used. Incorrect voltage could cause damage to the amplifier when the AC power cord is plugged in. Do not exceed rated voltage by more than 10%: operation below 90% of rated voltage will cause poor performance or may shut the unit off.

Leakage/Resistance Check

Before returning the unit to the customer, perform a leakage or resistance test as follows:

Leakage Current. Note there is no power switch on this unit. When the power plug is plugged in, the unit is live. Connect the unit to its rated power source. Using an ammeter, measure the current between the neutral side of the AC supply and chassis ground of the unit under test. if leakage current exceeds 0.5mA, the unit is defective. Reverse the polarity of the AC supply and repeat.

Resistance. Measure the resistance from either side of the line cord to chassis ground. If it is less than 500k ohms, the unit is defective.

WARNING! DO NOT return the unit to the customer if it fails one of these tests until the problem is located and corrected.

Critical Components

All components identified with the IEC symbol in the parts list and the schematic diagram designate components in which safety can be of special significance when replacing a component identified with . Use only the replacement parts designated in the parts list or parts with the same rating of resistance, wattage or voltage.

List of SafetyComponents Requiring ExactReplacements

F1	Fuse SLO BLO 2.0A 250V UL approved
PWRCORD	SPT-2 or better with polarized plug, UL approved wired with the hot side to fused side. Use with factory replacement panel strain relief only.
TRX	Transformer. Use only factory replacement.
BR RECT	Bridge diode. Use only factory replacement.
C1, 2	2200uF, 50V electrolytic filter caps. Be sure replacement part is at least the same working voltage and capacitance rating. Also the lead spacing is important. Incorrect spacing may cause premature failure due to internal cabinet pressure and vibration.
C10	10uF, 100 volt NPE low df radial.
S64AMI	Power output module. Use only factory replacement
Faceplate	Faceplate. Use only factory replacement
Air leak cover	Use only factory replacement
CMC	Use only factory replacement
L1	Use only factory replacement
Fuse PCB	Use only factory replacement
Main PCB	Use only factory replacement

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BASIC SPECIFICATIONS PB10 Subwoofer

Output Power	150 watts RMS
Driver	10" Woofer
Frequency Response	27Hz – to Low Pass Frequency setting
Inputs	Line Level (option: LFE); Speaker Level
Outputs	Speaker level fixed frequency 150Hz
Low-Pass Frequency	Variable from 50Hz – 150Hz
High-Pass Frequency	150Hz when using Speaker Level Output
Dimensions (H x W x D)	14" x 14" x 15" 356mm x 356mm x 381mm (with feet) 16" x 14" x 15" 406mm x 356mm x 381mm
Weight	35 lb/15.9kg

Refinements may be made on occasion to existing products without notice but will always meet or exceed original specifications unless otherwise stated.

DETAILED SPECIFICATIONS PB10 Subwoofer

JBL PB 10 **150W Powered Sub Amp**

LINE VOLTAGE	Yes/No	Hi/Lo Line	Nom.	Unit	Notes
US 120vac/60Hz	Yes	108-132	120	Vrms	Normal Operation
EU 230vac/50-60Hz	Yes	207-264	230	Vrms	Normal operation, MOMS required

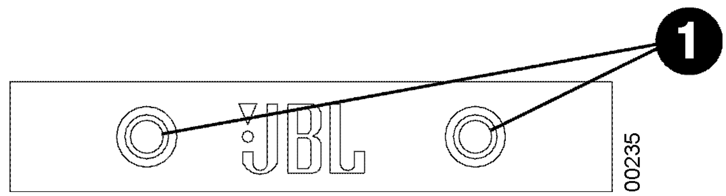
Parameter	Specification	Unit	QA Test Limits	Conditions	Notes
Amp Section					
Type (Class AB, D, other)	D	n/a	n/a		Class D Preferred...Sink required for Class AB
Load Impedance (speaker)	4	Ohms	n/a	Nominal	Z-curve required
Rated Output Power	150	Watts	70	1 input driven	
THD @ Rated Power	0.3	%	1	22k filter	75 Watts
THD @ 1 Watt	0.1	%	0.5	22k filter	
DC Offset	10	mV-DC	20	@ Speaker Outputs	
Damping factor	50	DF	35		Measured at the amplifier board THD < 0.1% 75 Watts @ 50Hz
Input Sensitivity					
Input Frequency	50	Hz	50	Nominal Freq.	
L&R	128	mVrms	±2dB	To 75 Watts	Single input driven LP defeat switch OFF
LFE	128	mVrms	±2dB	To 75 Watts	LP defeat switch ON- Single input driven
Speaker/Hi Level Input	1.28	Vrms	±2dB	To 75 Watts	Single input driven
Signal to Noise					
SNR-A-Weighted	100	dBA	75	relative to rated power	A-Weighting filter
SNR-unweighted	80	dBr	80	relative to rated power	22k filter
SNR rel. 1W-unweighted	65	dBr	60	relative to 1W Output	22k filter
Residual Noise Floor	1	mVrms	2	Volume @max, using DVM or A/P (BW=20 KHz)	
Residual Noise Floor	1.5	mVrms(max)	2	Volume @max, w/ A/P Swept Bandpass Measurement (Line freq.+ harmonics) (BW=20Khz)	
Input Impedance					
Line Input	20K	ohms	n/a	Nominal	
Speaker/Hi Level Input	4.7K	ohms	n/a	Nominal	
Filters					
Speaker in LP 2nd order varia	60-150	Hz	± 10		
Subsonic filter (HPF) fixed 6th	Fixed				
LFE Low pass 2nd order fixed	200>LP<1K	Hz		Single input driven+E106+E74	
Speaker out HP filter					
Left & Right	200	Hz	± 10	Speaker input - Spkr out 4 Ohms	
Left & Right	100	Hz	± 10	Speaker input - Spkr out 8 Ohms	
Limiter					
THD at Max. Output Power	n/a	n/a	functional	Maximum Output Power	Maximum THD as a result of limiting.
Signal Sensing (ATO)					
Auto-Turn-On (yes/no)	YES		functional	Auto - on selection switch in Auto	
ATO Input test frequency	50	Hz	functional	"	
ATO Level LFE Input	4	mV	functional	"	
ATO Level Speaker in	50	mV	functional	"	
ATO Turn-on time	5	ms	functional		
Auto Mute/ Turn-OFF Time	15	minutes	17		
Power on Delay time	3	sec.	4	AC Power Applied	
Transients/Pops					
ATO Transient	5	mV-peak	n/a	@ Speaker Outputs	
Turn-on Transient	50	mV-peak	2v-pp	@ Speaker Outputs	AC Line cycled from OFF to ON
Turn-off Transient	50	mV-peak	2v-pp	@ Speaker Outputs	AC Line cycled from ON to OFF
Efficiency	65	%	64		Nominal Line voltage 120 VAC / 230 VAC
Stand-by Input Power	15	Watts	18	@ nom. line voltage	0
Power Cons. @ rated power	115	Watts	120	@ nom. line voltage	75 Watts @ 4 Ohms nominal line voltage
Protection					
Short Circuit Protection	YES		functional	Direct short at output	
Thermal Protection	YES		functional	@1/8 max unclipped Power	
DC Offset Protection	YES		-	DC present at Speaker Out leads	
Line Fuse Rating	US version	Amps	1.5	Type-T or Slo Blo-250 V	Internal fuse
	EU	Amps	TBD	Type-T or Slo Blo-250 V	External fuse with UL/SEMKO rated holder

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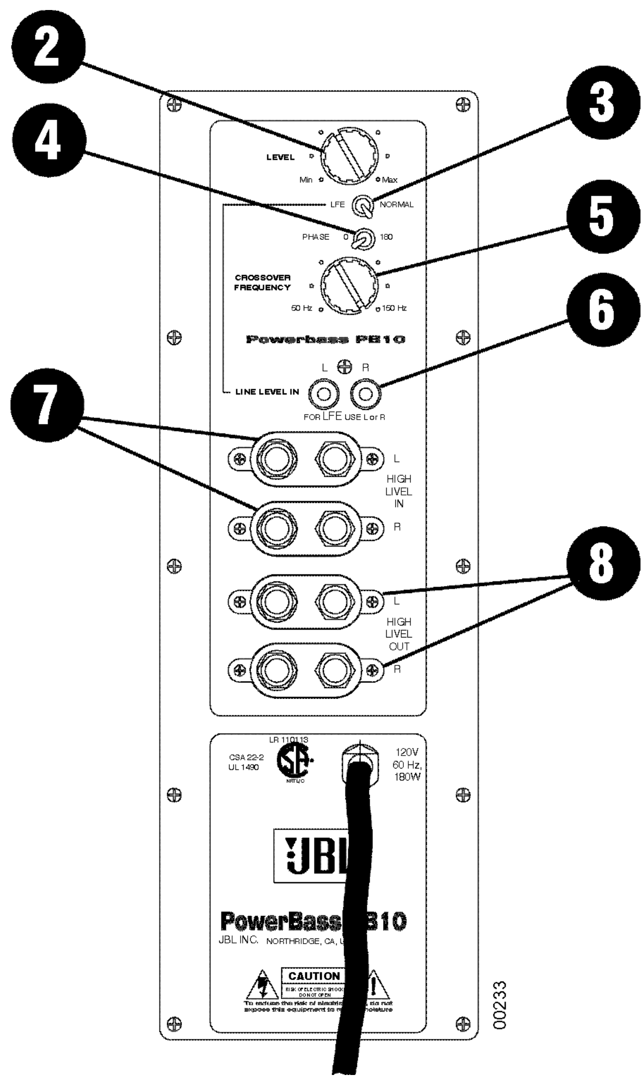
PB10 Subwoofer Controls and their Function

1. **Power -** These lights will be red when the unit is plugged in and not receiving a signal; when the PB10 receives a signal, the lights will cycle to GREEN. If no signal is received after 10-15 minutes the lights will cycle back to RED (standby) until a signal is present again.
2. **Level Control -** The subwoofer Level Control, PB10, (located on the rear panel) adjusts the volume of the subwoofer relative to the rest of the system.
3. **LFE/Normal Switch -** Ordinarily placed in the Normal position - but switch to LFE when playing Dolby DigitaL, DTS or other digital surround modes - see page 9.
4. **Phase Switch -** Changes the subwoofer's output to be in phase or 180 degrees out of phase with the program material.
5. **Crossover Frequency -** Sets the highest frequency the subwoofer will reproduce.
6. **Line Input -** Main Input connection to subwoofer (preferred).
7. **Speaker In Jacks -** Main Input connection to subwoofer when line level, subwoofer, or pre-amp output connectors are not available, or when a high pass filter (set at 150Hz to main loudspeakers is desired through the Speaker Output Jacks.
8. **Speaker Out Jacks -** Connected to main loudspeakers when the Speaker Input Jacks are used.

Front Panel



Rear Panel



Speaker Connection

When we designed the PB10 and PB12 powered subwoofers, our goal was to offer the user the best possible performance combined with the most flexible and complete installation options. Please look over the following three examples to determine which description best matches your system and follow the corresponding hookup instructions.

To use the binding-post speaker terminals with bare wire, unscrew the collar until the hole through the centerpost is visible under the collar.

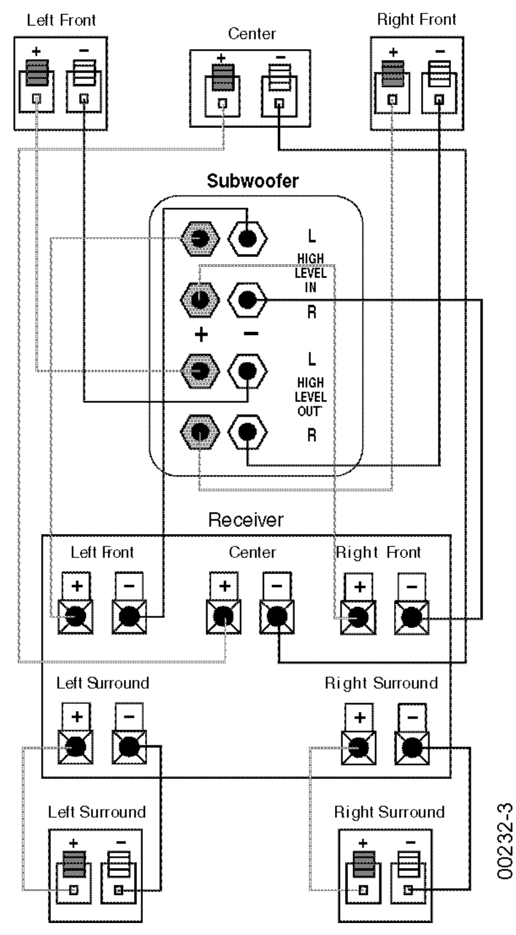
Insert the bare end of the wire through the hole in the post, then screw the collar back down until the connection is tight. The holes in the center of the collars are intended for banana-type connectors.

Dolby Pro Logic (Non-Digital)-Speaker Level

Use this installation method for Dolby Pro Logic applications (not Dolby Digital, DTS® or other digital processing), where the receiver/processor does not have a subwoofer output or a volume-controlled preamp (line-) level output:

Connect your receiver or amplifier's front left and right speaker terminals to the left and right terminals on the subwoofer that are marked "High Level In." Connect the left and right terminals on the subwoofer that are marked "High Level Out" to the corresponding terminals on the back of your front left and right speakers.

Connect your receiver or amplifier's center, left and right surround-speaker terminals to the corresponding terminals on the back of your center, left and right surround speakers.



Dolby Pro Logic (Non-Digital)-Line Level

Use this installation method for Dolby Pro Logic applications (not Dolby Digital, DTS or other digital processing), where the receiver/processor is equipped with a subwoofer output or a volume-controlled preamp (line-) level output:

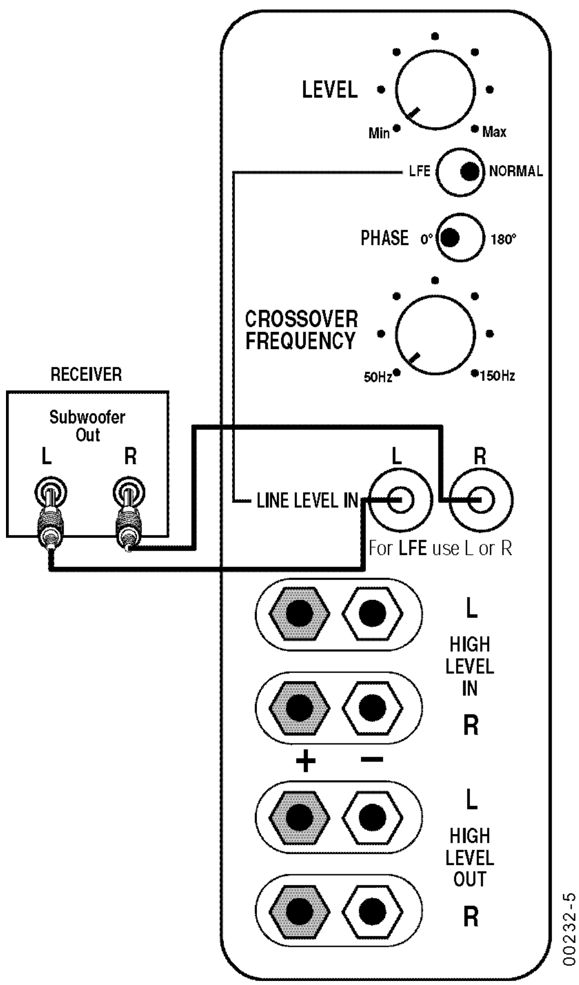
Use RCA-type patch cords to connect the line-level subwoofer outputs on your receiver or amplifier to the line-level inputs on the subwoofer. IMPORTANT: Make sure that the LFE toggle switch on the subwoofer is in the “Normal” position. Do not use the “LFE” position with Dolby Pro Logic-only processors.

Note: If your receiver or amplifier only has one subwoofer output jack, then you may connect the subwoofer output on your receiver/preamplifier to either the left or right line-level input on the subwoofer. It makes no difference which jack you choose.

Connect each speaker to the corresponding speaker terminals on your receiver or amplifier.

Make sure your receiver or processor is configured correctly; Make sure that the subwoofer is configured as “On.”

Note for advanced users: If your receiver/processor has a built-in low-pass crossover filter for the subwoofer output, then the LFE switch should be set to the “LFE” position to bypass the subwoofer’s internal crossover.



Dolby Digital or DTS (or Other Digital Surround Mode) Connection

Use this installation method for Dolby Digital, DTS or other digital surround processors:

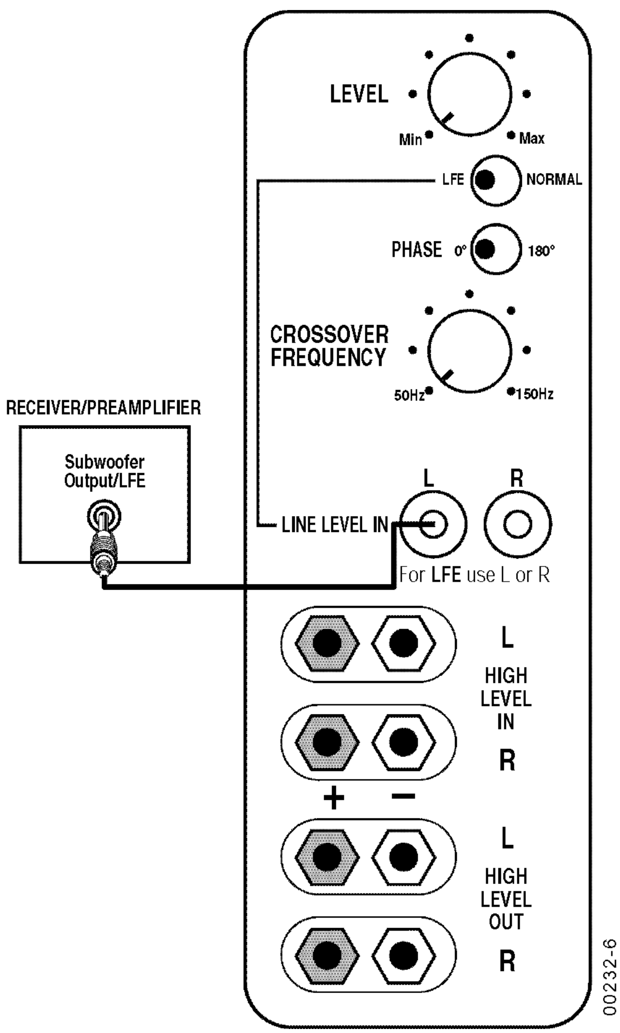
IMPORTANT: Make sure that the LFE toggle switch on the subwoofer is in the "LFE" position. Use the line-level input jacks for the low-Frequency Effects channel. Connect these jacks to the LFE output or subwoofer output on your receiver or amplifier.

Note: If your receiver or amplifier only has one subwoofer output jack, then you may connect the subwoofer output on your receiver/preamplifier to either the left or right line-level input on the subwoofer. It makes no difference which jack you choose.

Connect each speaker to the corresponding speaker terminals on your receiver or amplifier.

Make sure that you have configured your surround-sound processor for "Subwoofer On"or "LFE On."

The front left, front right, center and rear speakers should be set to "Small" or "Large" depending on their size and frequency response. Consult your receiver's or processor's owner's manual.



OPERATION

Power

When the unit is plugged in and the LEDs on the front of the unit will turn red. When a signal is present, the LEDs will turn green.

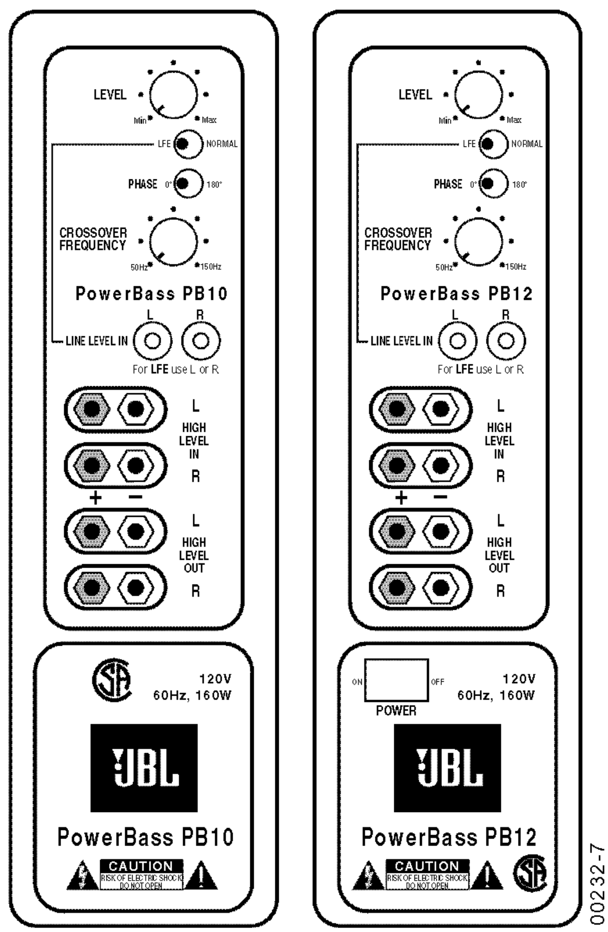
Note: It will take several minutes for the LEDs to turn from green to red after the input signal to the subwoofer is removed. Due to JBL's unique, high-output, high-efficiency amplifier design, power consumption is minimal when the subwoofer is not receiving a signal. The PB10 must be unplugged if you do not wish to leave it in auto (standby) mode.

Level Control

The subwoofer Level Control adjusts the volume of the subwoofer relative to the rest of the system. Proper level adjustments depends on several variables such as room size, subwoofer placement, type of main speakers and listener position. Adjust the subwoofer level so that the volume of the bass information is pleasing to you.

Crossover Adjustments

The Crossover Frequency Control determines the highest frequency at which the subwoofer reproduces sounds. If your main speakers can comfortably reproduce some low-frequency sounds, set this control to a lower frequency setting, between 50Hz-100Hz. This will concentrate the subwoofer's efforts on the ultradeep bass sounds required by today's films and music. If you are using smaller bookshelf speakers that do not extend to the lower bass frequencies, set the low-pass crossover control to a higher setting, between 120Hz-150Hz. This control is not used when the LFE switch is in the "LFE" position.



Phase Control



The Phase Control determines whether the subwoofer's piston-like action moves in and out in phase with the main speakers or opposite the main speakers. There is no correct or incorrect setting. Proper phase adjustment depends on several variables such as subwoofer placement and listener position. Adjust the phase switch to maximize bass output at the listening position.

Remember, every system, room and listener is different. There are no right or wrong settings; this switch offers the added flexibility to adjust your subwoofer for optimum performance for your specific listening conditions without having to move your speakers.

If at some time in the future you happen to rearrange your listening room and move your speakers, you should experiment with the phase switch in both positions, and leave it in the position that maximizes bass performance.

TROUBLESHOOTING

If you used the high-level (speaker) inputs and there is no sound from any of the speakers:

- Check that receiver/amplifier is on and source is playing.
- Check that powered subwoofer is plugged into and active electrical outlet and is switched on.
- Check all wires and connections between receiver/amplifier and speakers. Make sure all wires are connected. Make sure none of the speaker wires are frayed, cut or punctured.
- Review proper operation of your receiver/amplifier.

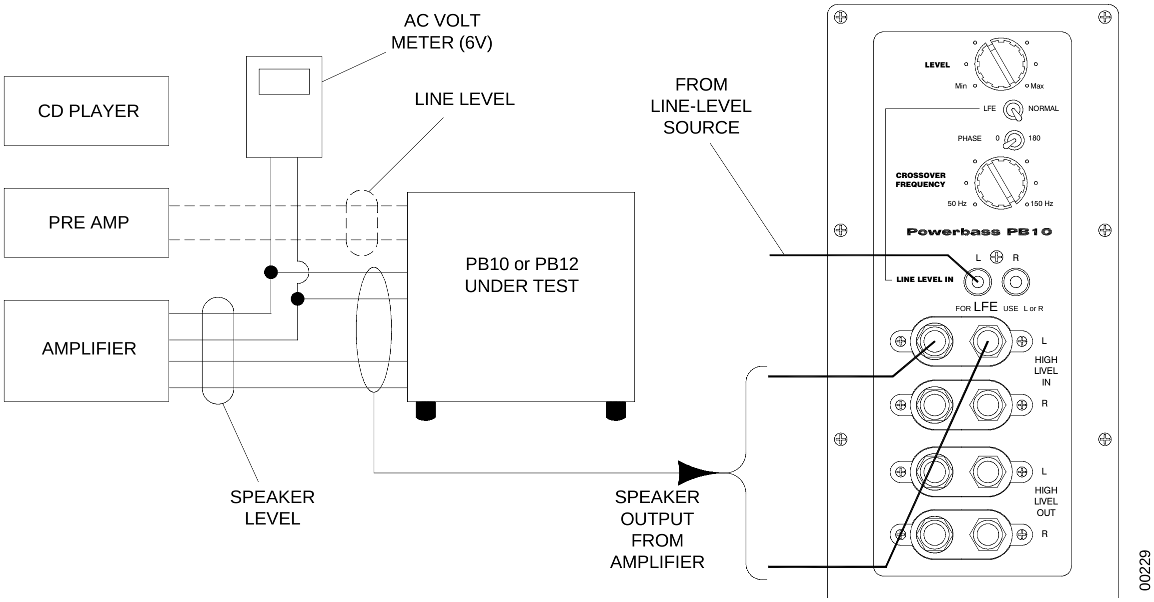
If there is low (or no) bass output:

- Make sure the connections to the left and right "Speaker Inputs" have the correct polarity (+and-).
- Make sure that the subwoofer is plugged into an active electrical outlet and (PB12 only) switched on.
- Adjust the crossover point.
- Flip the Phase Control switch to the opposite position.
- If you are using a Dolby Digital/DTS receiver or processor, make sure that the subwoofer adjustments on the receiver/processor are set up correctly.
- Slowly turn the Level Control clockwise until you begin to hear the desired amount of bass.

If you used the line-level inputs and there is no sound from the subwoofer:

- Check that receiver/amplifier is on and a source is playing.
- Check that powered subwoofer is plugged into an active electrical outlet and is switched on.
- Check all wires and connections between receiver/amplifier and subwoofer. Make sure all wires are connected. Make sure none of the wires are frayed, cut or punctured.
- Review proper operation of your receiver/amplifier.
- Slowly turn the Level Control clockwise until you begin to hear the desired amount of bass.
- Make sure that you have configured your receiver/processor so that the subwoofer/LFE output is on.

PB10 TEST SET UP AND PROCEDURE



General Function

UUT = Unit Under Test

1. Connect one line level input cable (RCA) from signal generator to either Right or Left Level input on UUT. VOLUME control should be full conterclockwise.
2. Turn on generator, adjust to **100mV, 50 Hz.**
3. Plug in UUT; LED's on the front panel may be either Red or Green. Turn VOLUME control full clockwise. Low Pass control should be set fully clockwise (150°).
4. LED should turn Green; immediately bass response should be heard and felt from port tube opening.
5. Turn off generator, turn VOLUME control fully counterclockwise, disconnect RCA cables.
6. Connect one pair of speaker cables to either high level input terminal on UUT. Cables should be connected to an integrated amplifier fed by the signal generator.
7. Turn on generator and adjust so that speaker level output is **1.0V, 50 Hz.** Turn VOLUME control full clockwise.
8. Green LED should light, immediate bass response should be heard and felt from the port tube opening.

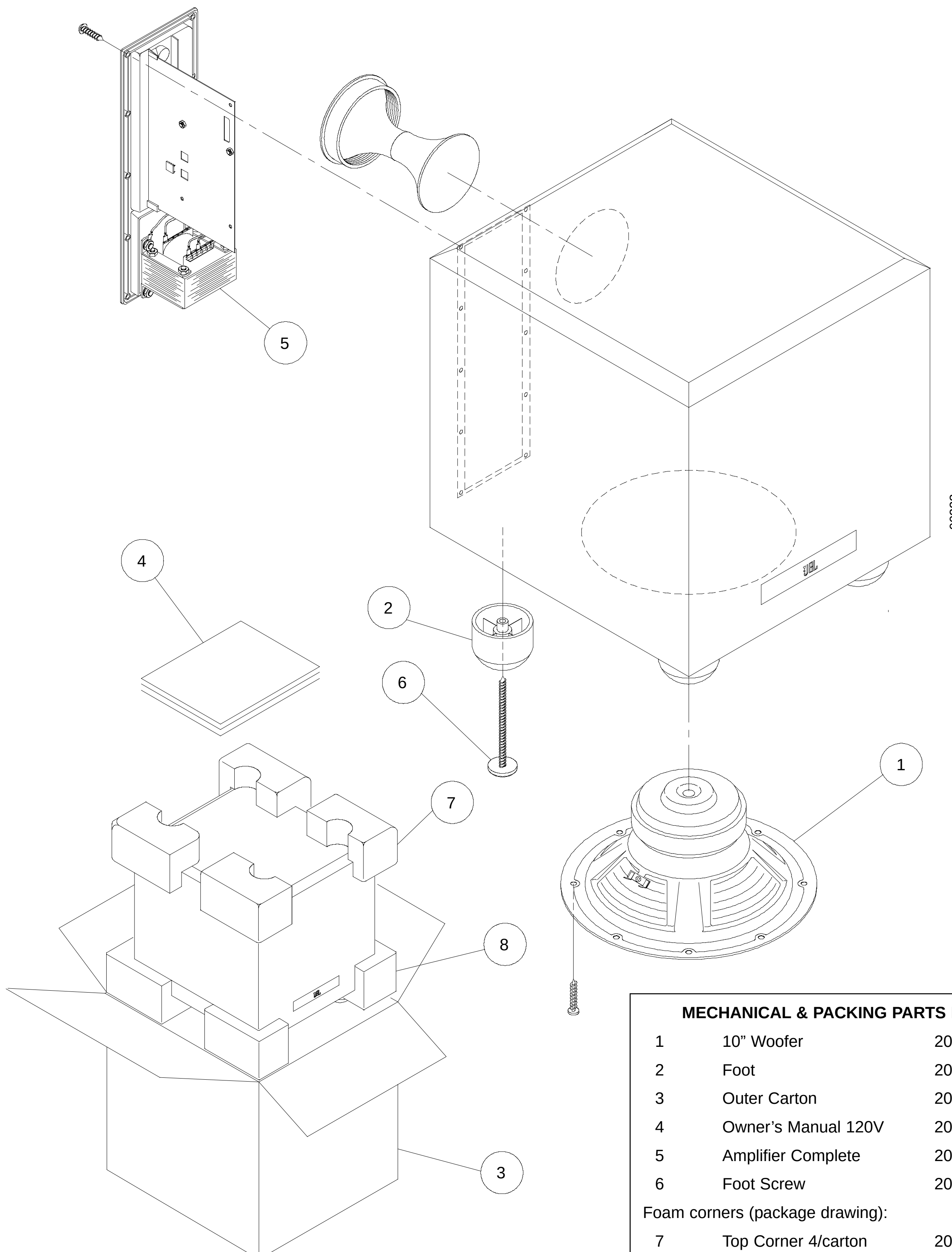
Sweep Function

1. Follow steps 1-4 above, using a sweep generator as a signal source.
2. Sweep generator from 20Hz to 300Hz. Listen to the cabinet and drivers for any rattles, clicks, buzzes or any other noises. If any unusual noises are heard, remove driver and test.

Driver Function

1. Remove driver from cabinet; detach + and - wire clips.
2. Check DC resistance of driver; it should be **5.8 ohms.**
3. Connect a pair of speaker cables to driver terminals. Cables should be connected to an integrated amplifier fed by a signal generator and adjust so that speaker level output is **5.0V.**
4. Sweep generator from 20Hz to 1kHz. Listen to driver for any rubbing, buzzing, or other unusual noises.

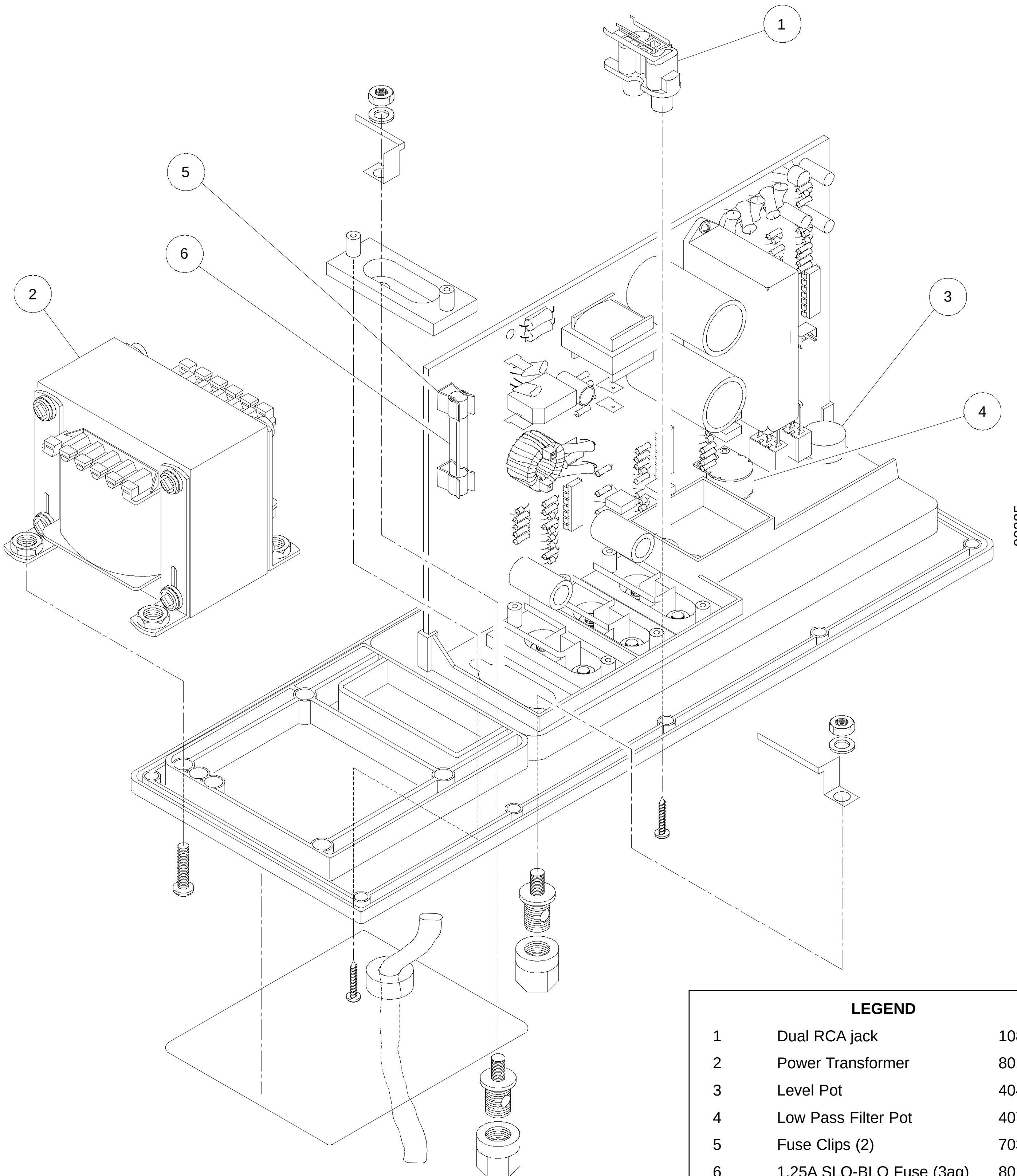
Exploded and Packaging Views



(IMAGE REDUCED)

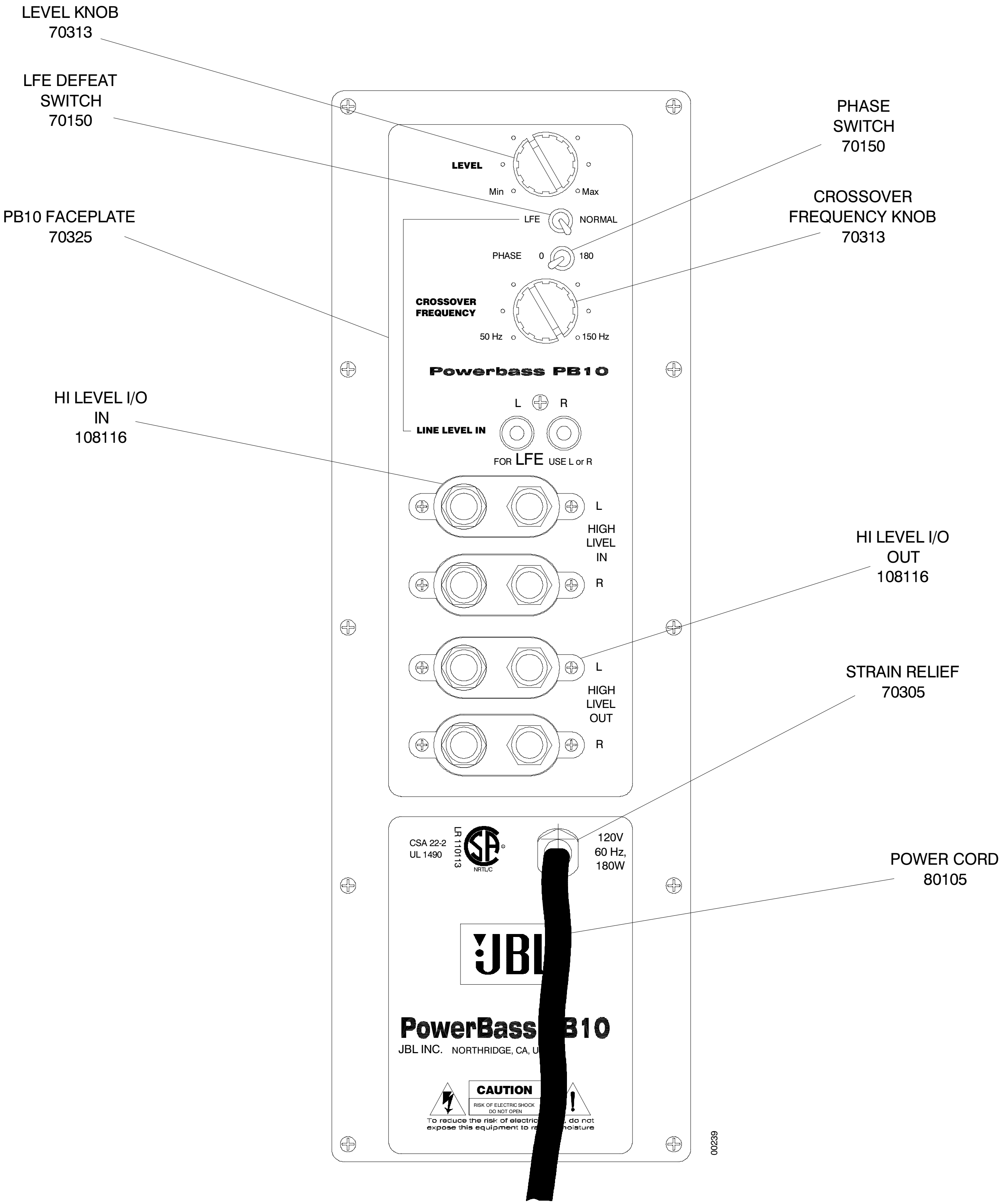
MECHANICAL & PACKING PARTS LIST		
1	10" Woofer	203400
2	Foot	203410
3	Outer Carton	203420
4	Owner's Manual 120V	203430
5	Amplifier Complete	203450
6	Foot Screw	203411
Foam corners (package drawing):		
7	Top Corner 4/carton	203460
8	Bottom Corner 4/carton	203470

Amplifier Exploded View



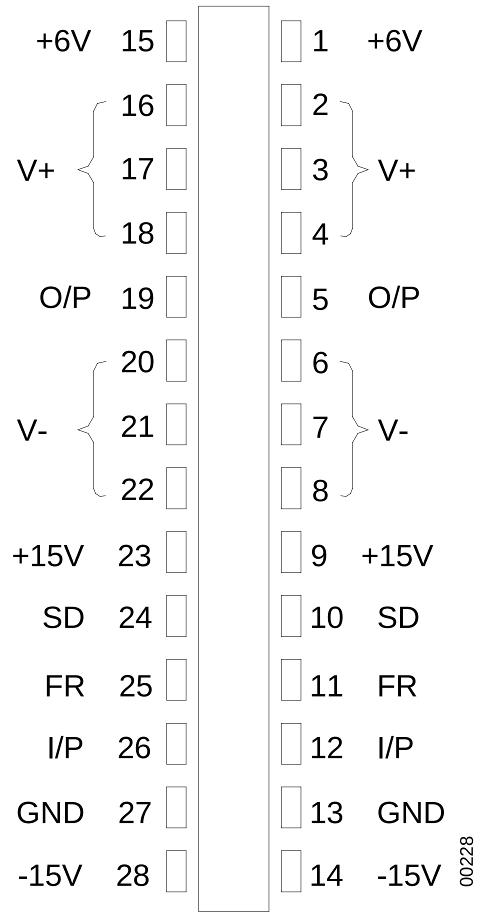
LEGEND		
1	Dual RCA jack	108324
2	Power Transformer	80135
3	Level Pot	40402
4	Low Pass Filter Pot	40707
5	Fuse Clips (2)	70323
6	1.25A SLO-BLO Fuse (3ag)	80114

Amplifier Faceplate Parts



Integrated Circuit Diagrams

S53AMI/S64AMI - Power Amp module SAFETY PART



NOTE: THE FOLLOWING PROCEDURES MUST BE FOLLOWED WHEN INSTALLING NEW S53AMI/S64AMI AMP MODULES:

FAILURE TO FOLLOW ONE OR MORE OF THESE STEPS MAY RESULT IN THE INSTANT DESTRUCTION OF THE MODULE WHEN POWERED UP.

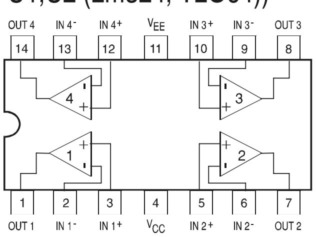
1. Align white indent marker on Amp Module with indent marker on main PCB; alternately observe position of label on top of the module; incorrectly replacing the Module 180° in the PCB slot will result in its destruction.
2. All AC powered test instruments (meters, oscilloscopes, etc.) must have a floating ground, i.e., be connected to an isolation transformer.
3. Align and position the Amp Module before soldering.
4. Attach the amp Module with the mounting screws <u>before soldering</u> or powering up.
5. Use only rosin-core or non-acid core solder; thoroughly de-flux the surfaces after soldering.

If the new S53AMI/S64AMI Amp Module has larger mounting hole(s) in the case, and the stock screws no longer will fit, and screws of the proper type cannot be obtained locally order:

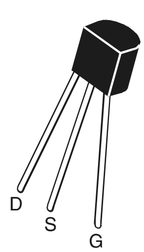
(2) part# 60301S (screws)

(2) part# 60301N (nuts)

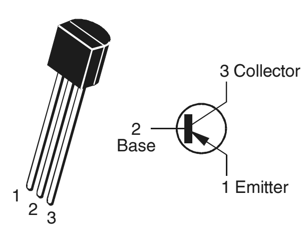
U1,U2 (Lm324, TLO64))



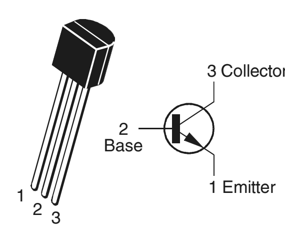
N-Chan JFET Q1



Q10,Q11 (MPSA56)



Q12 (2N4401)



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PB10 Testing Procedure

JBL PB10 TESTING PROCEDURE

A. Power Amp Section

Resistance Check	Resistance from O/P of the module to GND should be >1M (NO LOAD)
	Resistance from V+ of the module to V- of the module should read >4k
	Resistance from V+ of the module to O/P of the module should read >1M
	Resistance from V- of the module to O/P of the module should read >1M

2. Power Up LED RED

With a 5mV signal to Low level input, LED should change to GREEN

-Voltage measurements (DVM)

	OP AMP	
LED	P-U1(1)	P-U1(7)
RED	0Vrms	14VDC
GREEN	12Vrms	-14VDC

3. D.C. Operation

-Voltage measurements (DVM) on Power Amp Module

Between	+6V	V+	O/P	V-	+15V	S/D	FR	I/P	GND	-15V
And This Point	V-	GND	GND	GND	GND	V-	GND	GND	GND	GND
Get this Reading	+5.75V	+45.7v	0V	-45.7V	+15.5V	+4.75V	0V	0V	0V	-15.5V

4. Check Switching Frequency

Oscilloscope - **Use scope (EITHER USES AN ISOLATION TRANSFORMER OR ATTACHES THE PROBE TIP TO SPK- and REFERENCE LEAD TO SPK+)**

A 10Mv signal may need from the input to trigger the **Switch** frequency turn on

Reading 100kHz +/-10%,1Vpp

B. Pre Amp Section

Low Level Input Sensitivity

-Set up Turn level, Low-Pass Pot Fully CW and LFE switch off
Generator Set at 100mV@50Hz
Signal to Low level input

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PB10 Testing Procedure (Cont.)

- Voltage measurements

OP AMP									SPEAKER O/P
U1(7)	U2(7)	U1(1)	U2(1)	U1(14)	U2(14)	U2(8)	PU1(14)	PU1(8)	
180mV	266mV	325mV	404mV	451mV	451mV	1.33V	6.37V	5.72V	15.3V

2. High Level Input Sensitivity

-Set up   Turn level, Lo Pass Pot Fully CW and LFE switch off
Set Generator at 1.09V@50Hz
Signal to High level input

-Voltage measurements 15.3V at speaker output

3. Low-Pass

-Set up   Set Generator at 100 mV@100Hz
Signal to Low level input
Measure voltage at speaker output

-Voltage measurement

Low-Pass Pot Setting	Output
CW	11.4V
CCW	2.19V

4. LFE

-Set up   Set Generator at 100mV@200Hz
Signal to Low level input
Measure voltage at speaker output

LFE switch Setting	Output
OFF	2.96V
ON	8.40V

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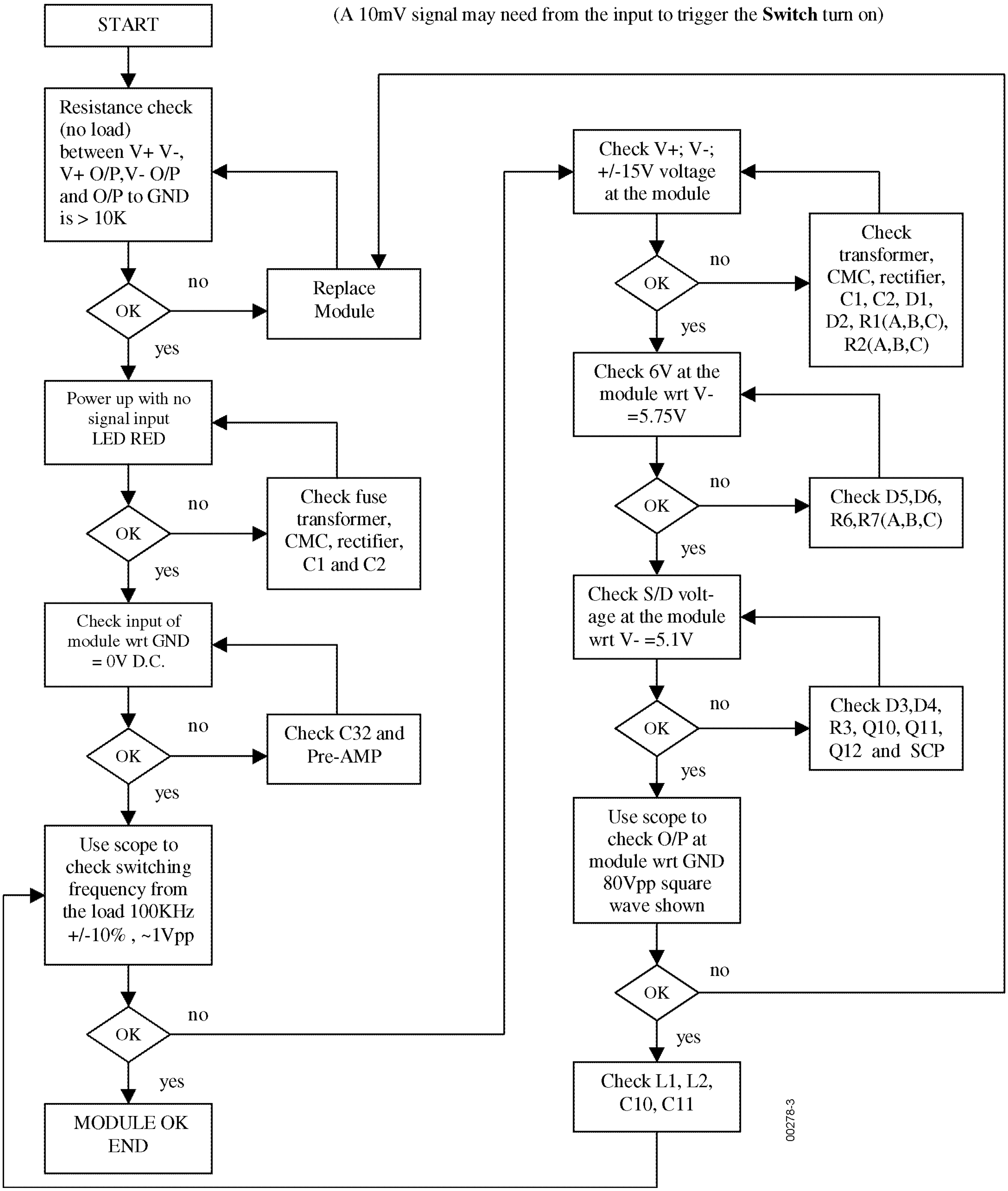
See flow chart next page for diagnostics.

PB10 Testing Procedure (Cont.)

PB10 POWER MODULE TESTING FLOW CHART

CAUTION : MODULE OUTPUT IS FLOATING AND IS ***NOT*** PROTECTED AGAINST A SHORT TO GROUND. ALL TEST INSTRUMENTS CONNECTED TO THE OUTPUT ***MUST*** BE FLOATING. ATTACH THE SCOPE PROBE TIP TO SPK - and REFERENCE LEAD TO SPK+.

(A 10mV signal may need from the input to trigger the **Switch** turn on)



PB10 Electrical Parts List

PB10 POWER AMP section of PCB Version 6.3.

Part #	Designator				Description
Semiconductors					
60102	U1	TLO64			Quad OpAmp
50100		RS604	6AMP		BR RECT
50105	D1	1N4744A	15V		1w Zener
50112	D10	1N5242B	12V		.5w Zener
50104	D11	1N4148			Sig Diode
50112	D12	1N5242B	12V		.5w Zener
50104	D13	1N4148			Sig Diode
50104	D14	1N4148			Sig Diode
50105	D2	1N4744A	15V		1w Zener
50101	D3	1N5256B	30V		.5w Zener
50104	D4	1N4148			Sig Diode
50113	D5	1N4735A	6.2V		1W
50107	D6	1N5234B	6.2V		.5w Zener
50104	D7	1N4148			Sig Diode
50104	D8	1N4148			Sig Diode
60157	Q1	2N5457	25V		N-chnl FET
60154	Q10	MPSA56	120V		PNP 600mA
60154	Q11	MPSA56	120V		PNP 600mA
60156	Q12	2N4401	40V		NPN 600mA
Capacitors					
30706	C1	4700uF	50V	+80 / -20	Electrolytic 105C
30712	C10	10uF	100V	0.2	BP/NP Electr DF<.1
30502	C11	100nF	50V	0.2	mono ceramic
30706	C2	4700uF	50V	+80 / -20	Electrolytic 105C
	C20	NOT USED			
30502	C21	100nF	50V	0.2	mono ceramic
30502	C22	100nF	50V	0.2	mono ceramic
30526	C24	220nF	50V	0.1	mono ceramic
30529	C25	1n5F	50V	0.1	mono ceramic
30508	C26	10nF	50V	0.1	mono ceramic
30513	C27	3n3F	50V	0.1	mono ceramic
30502	C3	100nF	50V	0.2	mono ceramic
30714	C32	10uF	35V	+80/-20	Electrolytic
30715	C40	10uF	16V	+80/-20	Electrolytic
30716	C41	1uF	16V	+80/-20	Electrolytic
30717	C42	100uF	16V	+80/-20	Electrolytic
30702	C6	100nF	50V	0.2	mono ceramic
30505	C7A	100nF	100V	0.2	mono ceramic or film
30505	C7B	100nF	100V	0.2	mono ceramic or film
	CW,CZ	NOT USED			

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PB10 Electrical Parts List (Cont.)

PB10 POWER AMP section of PCB Version 6.3.

Part #	Designator			Description
Resistors				
	R100	NOT USED		
40105	R10A	0.1R	.5W	0.05 metal
40105	R10B	0.1R	.5W	0.05 metal
40105	R10C	0.1R	.5W	0.05 metal
40420	R11	1k	.25W	0.05 carbon
40420	R12	1k	.25W	0.05 carbon
40417	R13	47k	.25W	0.05 carbon
40718	R14	3k3	.25W	0.05 carbon
40406	R15	100k	.25W	0.05 carbon
40719	R1A	2k2	1W	0.05 metal
40719	R1B	2k2	1W	0.05 metal
40719	R1C	2k2	1W	0.05 metal
40405	R21	4K7	.25W	0.05 carbon
40720	R22	42K2	.25W	0.01 metal
40721	R23	237k	.25W	0.01 metal
	R24	NOT USED		
	R25	NOT USED		
40722	R26	6k8	.25W	0.05 carbon
40723	R27	2k2	2W	0.05 metal
40110	R28	732R	0.5W	0.01 metal
40110	R29	732R	0.5W	0.01 metal
40719	R2A	2k2	1W	0.05 metal
40719	R2B	2k2	1W	0.05 metal
40719	R2C	2k2	1W	0.05 metal
40702	R3	6M8	.25W	0.05 carbon
40723	R30	2k2	2W	0.05 metal
40417	R31	47k	.25W	0.05 carbon
40417	R32	47k	.25W	0.05 carbon
40427	R33	23k7	.25W	0.01 metal
40724	R34	8k87	.25W	0.01 metal
40725	R4	15k	0.5W	0.01 metal
40420	R40	1k	.25W	0.05 carbon
40701	R41	1000k	.25W	0.05 carbon
40409	R42	10k	.25W	0.05 carbon
40701	R43	1000k	.25W	0.05 carbon
40406	R44	100k	.25W	0.05 carbon
40415	R45	470K	.25W	0.05 carbon
40701	R46	1000k	.25W	0.05 carbon
40409	R47	10k	.25W	0.05 carbon
40409	R48	10k	.25W	0.05 carbon
40726	R49	15k	.25W	0.05 carbon
40412	R5	33k2	.25W	0.01 metal
40427	R50	2k2	.25W	0.05 carbon
40111	R6	47R	.25W	0.05 carbon

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PB10 Electrical Parts List (Cont.)

PB10 POWER AMP section of PCB Version 6.3.

Part #	Designator			Description	
40728	R7A	5k6	1W	0.05	metal
40728	R7B	5k6	1W	0.05	metal
40728	R7C	5k6	1W	0.05	metal
40729	R8A	4k7	1W	0.05	metal
40729	R8B	4k7	1W	0.05	metal
	R9	NOT USED			

Miscellaneous

80101	L1	110uH			Gapped E-core choke
80102	L2	2.2uH			2.2uH ferrite bead
	L3	0-R Jumper			
	L4	0-R Jumper			
80100	CMC	2m2H	5 Amp	0.05	2.2mH choke
60301	MODULE	S53			S53AMI amp module
108326	LED Harness	MOLEX 2			FEMALE
80135	TRX	MCI 5024	100VA	Conc Wnd	Mtd on Faceplate
50106	On Harness	2 Clr LED			T 1 3/4 Type
50106	On Harness	2 Clr LED			T 1 3/4 Type
70322	LED PCB socket				Male PCB LED socket
80114	3AG FUSE	1.25A SloBlo			Glass
70324	0.187" Tabs		7		0.187" PCB fastons
70323	PCB-mount Fuse		2		PCB fuse clips
70325	PB10 faceplate				PB10 faceplate
80105	Power cord				Power cord
70305	Strain relief				Strain relief

PB10 PREAMP section of PCB Version #6.3

Semiconductors

60100	U1	LM324			LM324 op amp
60100	U2	LM324			LM324 op amp

Capacitors

Film Caps may be used in any position EXCEPT C1, C2

30707	C1	200uF	50V	0.2	BP Electrolytic
30526	C10	220nF	50V	0.1	mono ceramic
30514	C11	47nF	50V	0.1	mono ceramic
30504	C12	100n	50V	0.1	mono ceramic
30514	C13	47n	50V	0.1	mono ceramic
30528	C16	220nF	50V	***0.05***	film
30528	C17	220nF	50V	***0.05***	film
30100	C18	330pF	50V	0.2	mono ceramic
30100	C19	330pF	50V	0.2	mono ceramic
30707	C2	200uF	50V	0.2	BP Electrolytic

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PB10 Electrical Parts List (Cont.)

PB10 PREAMP section of PCB Version 6.3.

Part #	Designator			Description	
30519	C20	100nF	50V	0.2	mono ceramic
30519	C21	100nF	50V	0.2	mono ceramic
30519	C22	100nF	50V	0.2	mono ceramic
30519	C23	100nF	50V	0.2	mono ceramic
30101	C3	220pF	50V	0.2	mono ceramic
	C30	NOT USED			
30101	C4	220pF	50V	0.2	mono ceramic
30101	C5	220pF	50V	0.2	mono ceramic
30101	C6	220p	50V	0.2	mono ceramic
30527	C7	330nF	50V	***0.05***	film
30527	C8	330nF	50V	***0.05***	film
30527	C9	330nF	50V	***0.05***	film

Resistors

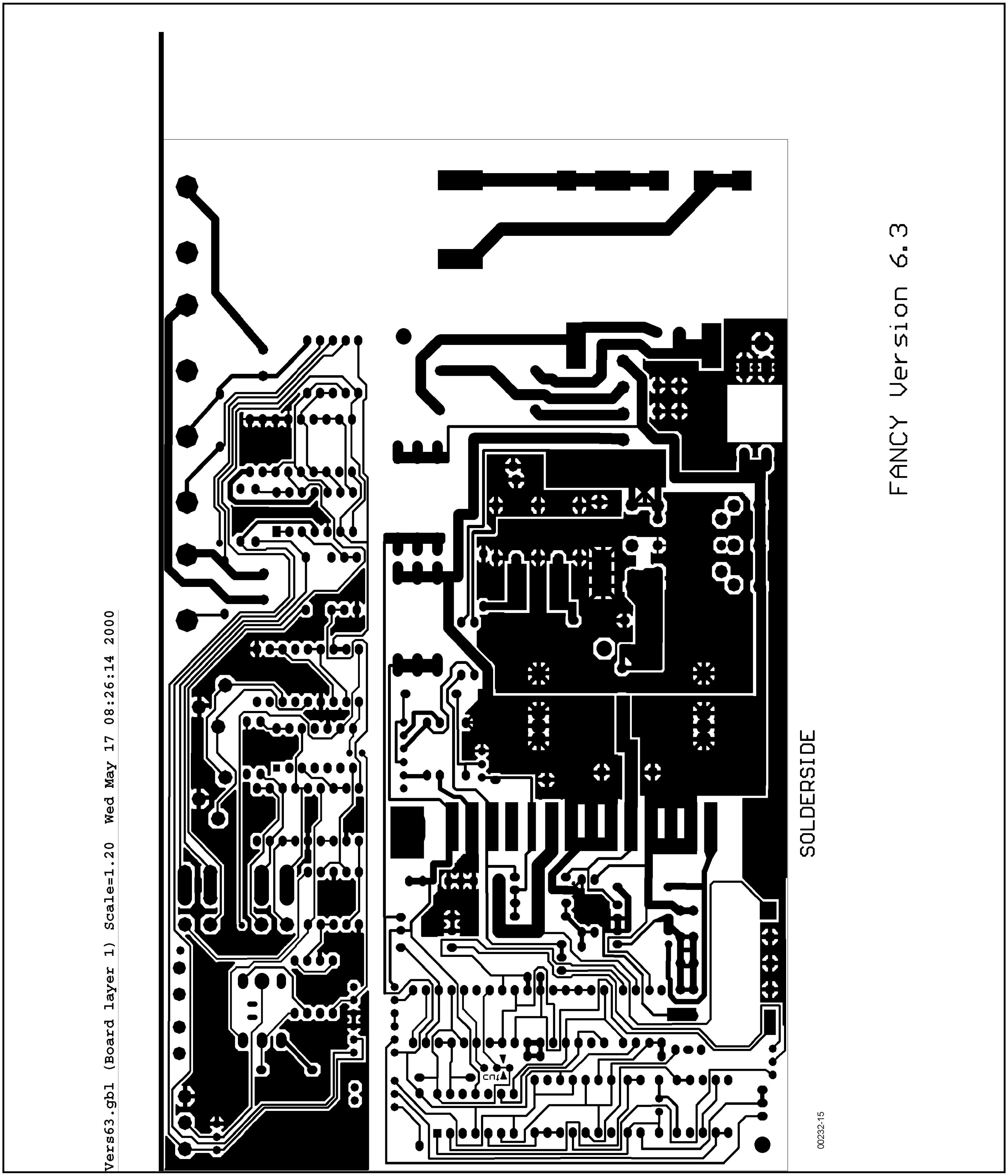
40405	R1	4k7	.25W	0.05	carbon
40409	R10	10k	.25W	0.05	carbon
40708	R11	57k6	.25W	0.01	carbon
40454	R12	45k3	.25W	0.01	metal
40412	R13	33k2	.25W	0.01	metal
40709	R14	68k1	.25W	0.01	metal
40710	R15	11k3	.25W	0.01	metal
40711	R16	1k3	.25W	0.01	metal
40712	R17	243k	.25W	0.01	metal
40441	R18	13k7	.25W	0.01	metal
40441	R19	13k7	.25W	0.01	metal
40405	R2	4k7	.25W	0.05	carbon
40713	R20	5k6	.25W	0.05	carbon
	R21	0r Jumper			
40713	R22	5k6	.25W	0.05	carbon
	R23	0r Jumper			
40109	R24	604r	.25W	0.01	metal
40412	R25	33k2	.25W	0.01	metal
40405	R26	4k7	.25W	0.01	metal
40109	R27	604r	.25W	0.01	metal
40412	R28	33k2	.25W	0.01	metal
40406	R3	100k	.25W	0.05	carbon
40714	R30	14k	.25W	0.01	metal
40715	R33	9k09	.25W	0.01	metal
40716	R34	60k4	.25W	0.01	metal
40451	R35	137k	.25W	0.01	metal
40406	R4	100k	.25W	0.05	carbon
40406	R5	100k	.25W	0.05	carbon
40406	R6	100k	.25W	0.05	carbon
40717	R8	2k7	.25W	0.05	carbon
40717	R9	2k7	.25W	0.05	carbon

Miscellaneous

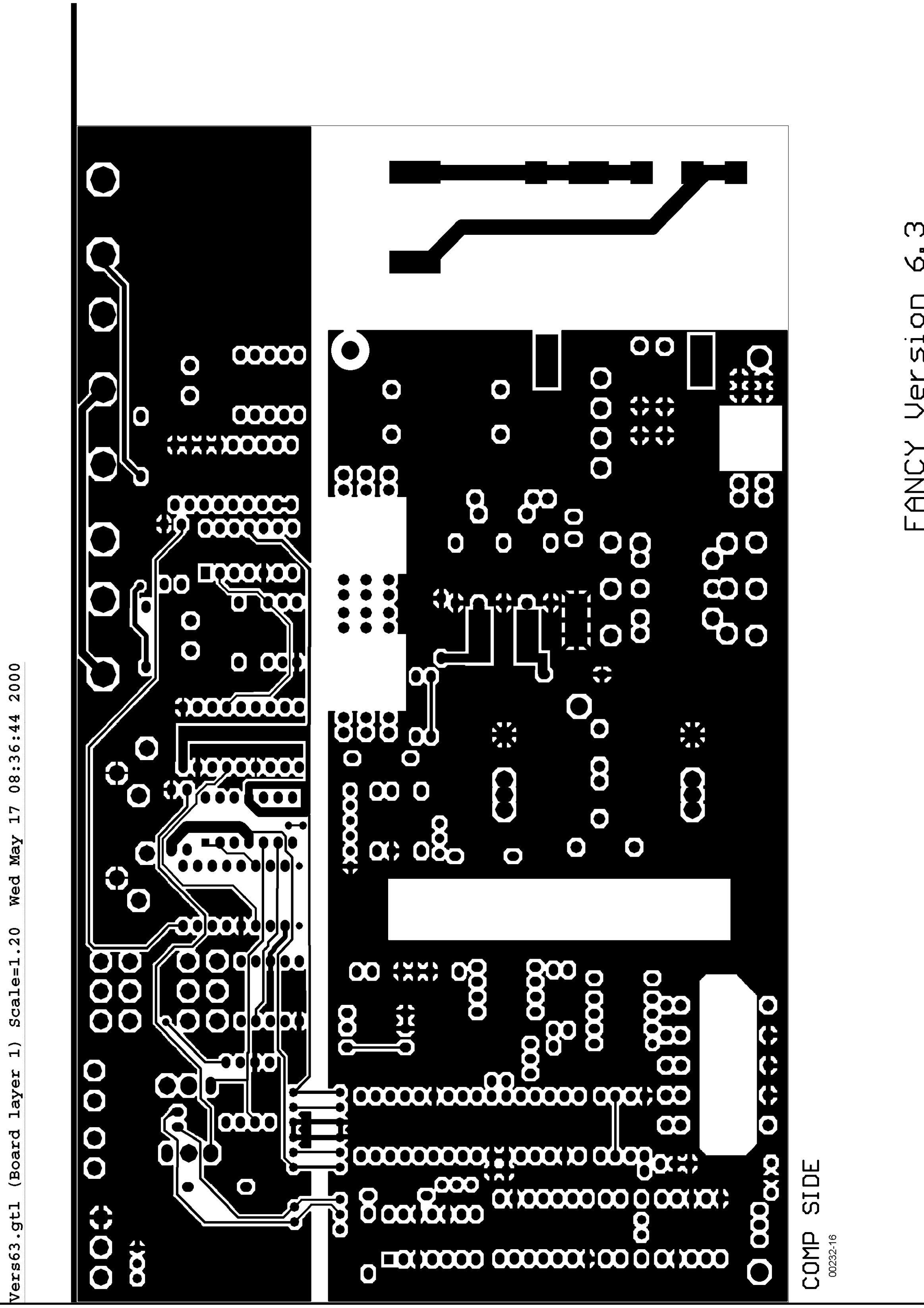
108116	HI LEVEL I/O		OUT		Binding Post
108116	HI LEVEL I/O		IN		Binding Post
108324	RCA CONNECTOR				DUAL RCA-yellow
40402	LEVEL	5k POT		0.2	Log (A) Pot
40707	Low Pass	20k POT		0.2	Lin (B) Pot.
70150	LFE Defeat	SW SPDT			mini-Toggle
70150	Phase Switch	SW SPDT			mini-Toggle

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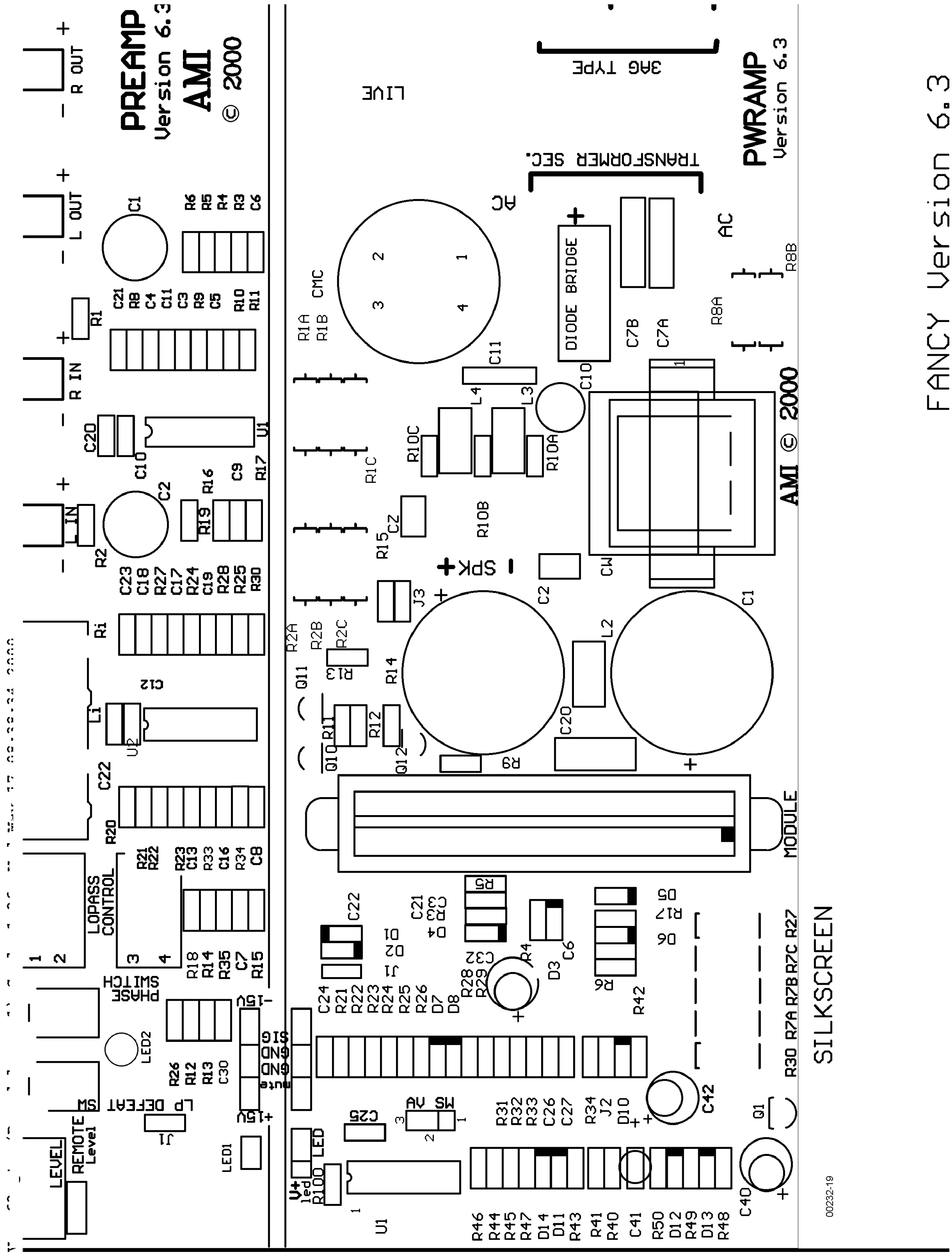
PB10 PCB's


Vers63.gbl (Board layer 1) Scale=1.20 Wed May 17 08:26:14 2000
SOLDERSIDE
FANCY Version 6.3
00232-15

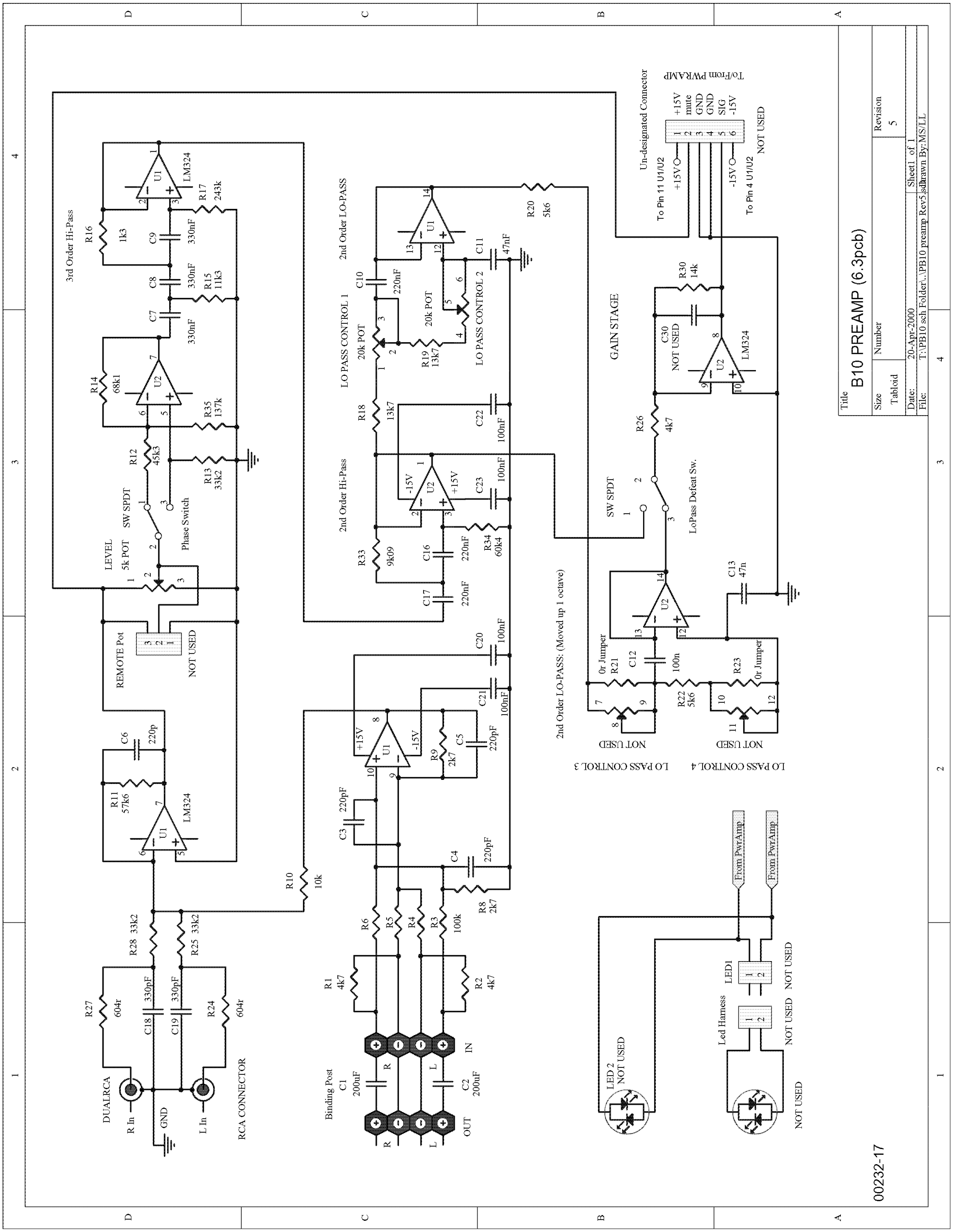
PCB's (Cont.)


FANCY Version 6.3
Vers63.gtl (Board layer 1) Scale=1.20 Wed May 17 08:36:44 2000
COMP SIDE
00232-16

PCB's (Cont.)


PREAMP
Version 6.3
AMI
© 2000
PWRAMP
Version 6.3
AMI © 2000
FANCY Version 6.3
SILKSCREEN
TRANSFORMER SEC.
3AG TYPE
DIODE BRIDGE
MODULE
LOPASS CONTROL
PHASE SWITCH
LP DEFEAT SW
REMOTE Level
LEVEL
00232-19

Schematics


B10 PREAMP (6.3pcb)
Title
Size
Tabloid
Number
Revision
5
Date: 20-Apr-2000
Sheet1 of 1
File: T:\PB10 sch Folder\..\PB10 preamp Rev5.sch
Drawn By: MS/LL
00232-17
3rd Order Hi-Pass
2nd Order LO-PASS
2nd Order Hi-Pass
GAIN STAGE
LO PASS CONTROL 1
LO PASS CONTROL 2
LO PASS CONTROL 3
LO PASS CONTROL 4
2nd Order LO-PASS: (Moved up 1 octave)
LoPass Defeat Sw.
Phase Switch
REMOTE Pot
NOT USED
Un-designated Connector
To/From PWRAMP
RCA CONNECTOR
DUALRCA
Binding Post
Led Harness
From PwrAmp

Schematics (Cont.)

